

Utilities

Nuclear: Gaining Momentum Amid Fuel Security Issues

Highlights

- As Malaysia strives to achieve its Net Zero target by 2050, the Energy Commission (EC) and PETRA continue to navigate the energy trilemma of ensuring energy security, affordability, and sustainability. Nuclear energy is seen as a potential replacement as Malaysia phases out base-load coal fired power plants.
- Amid the Middle East crisis, numerous countries are seriously considering nuclear power plant as a sustainable source of energy. For Malaysia, nuclear energy adoption has been formally embedded within the 13MP, with an affirmative policy decision slated for consideration beyond 2030 (and another decade to design and build the plant).
- We expect the Malaysia government to drive nuclear power plant development, with offtaker Tenaga Nasional potentially taking an active role in asset ownership. Maintain OVERWEIGHT. Top picks are Tenaga, Solarvest, Pekat Group and Northern Solar.

Analysis

- Nuclear energy: The sustainable solution for Peninsular Malaysia...** Under the 13th Malaysia Plan (13MP), Malaysia aims to integrate nuclear energy into its national power mix, with an affirmative decision to be determined after 2030 (and another decade to design and build the plant). The Ministry of Energy Transition and Water Transformation (PETRA) has designated MyPower Corporation Malaysia (MyPOWER) as the nation's Nuclear Energy Programme Implementing Organisation (NEPIO) and Malaysia has officially implemented the Atomic Energy Licensing Act (Amendment) 2025, effective Dec 25.
- ...to achieve Malaysia's 70% RE generation mix.** With Malaysia's mandate to phase-out coal-fired power plants by 2050, nuclear energy is studied intently given its consistent electricity output to deliver affordable base load power. Its high capacity factor of over 90% (Malaysia's coal power plants: 75%; solar: 25%) will complement intermittent renewable sources such as solar. This will help the country achieve its 70% generation mix by 2050.
- Malaysia likely to consider conventional nuclear plant...** As Malaysia considers its options, preference is skewed towards the conventional model, given maturity and proven nuclear technology. Conventional nuclear plants offer a well-documented history of safety, reliability, and baseload power generation, making them better suited for a country's first nuclear deployment. Both conventional nuclear power plants (NPP) and small modular reactors (SMR) command an operational lifespan of 60-80 years. This is reinforced by a low unplanned capability loss (UCL), with the global average at 4% over 2022–24.

OVERWEIGHT
(Maintained)

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Sector Picks

Company	Rec	Target Price (RM)	EV/EBITDA (x)	Div Yield (%)
Tenaga	BUY	16.30	5.8	4.1
Solarvest	BUY	3.00	17.5	0.0
Pekat Group	BUY	2.00	6.7	0.7
Northern Solar	BUY	1.00	7.1	0.0

Source: Bloomberg, UOB Kay Hian

Malaysia's Forecasted Nuclear Capacity



Nuclear

Capacity

Generation Mix

2026

- MW

0.0 %

2035

3,300 MW

3.6 %

Source: SingleBuyer

Baseload Power

- Minimum level of electricity demand that must be supplied continuously to meet a country's essential energy needs.
- Produce power at a constant rate and are not designed to respond to peak demands or emergencies.
- Baseload is typically at 30-40% of the maximum load and usually coal- or nuclear-fuelled (low-cost fuel and steady state power generation).

Source: PennState University

Peer Comparison

Company	Ticker	Rec	Price 07 Apr 26 (RM)	Target Price (RM)	Market Cap (RMm)	PE 2026F (x)	PE 2027F (x)	EV/EBITDA 2026F (x)	EV/EBITDA 2027F (x)	Dividend Yield 2026F (%)	Dividend Yield 2027F (%)
Malakoff Corp	MLK MK	HOLD	0.82	0.90	4,007	15.2	13.2	4.6	4.2	5.5	6.3
Tenaga	TNB MK	BUY	14.00	16.30	81,608	16.6	16.1	5.8	5.7	4.1	4.4
Gas Malaysia	GMB MK	HOLD	5.59	4.50	7,178	17.0	16.5	10.5	10.2	4.5	4.7
Renewable Energy											
Solarvest Holdings	SOLAR MK	BUY	2.36	3.00	1,888	29.5	22.9	17.5	14.2	0.0	0.0
Pekat Group	PEKAT MK	BUY	1.36	2.00	961	17.8	15.0	6.7	5.3	0.7	0.7
Northern Solar	NORTHERN MK	BUY	0.6	1.00	237	15.1	10.6	7.1	4.7	0.0	0.0

Source: Bloomberg, UOB Kay Hian

- **...as opposed to SMRs.** SMRs are considered the future of nuclear energy, given their affordability, speed to build (modular construction), flexible capacity and easy capacity expansion as well as their wide range of applications (hydrogen production and water desalination). However, most SMR concepts are still within advanced development stages with potential commercialisation within the next decade. To date, there are only two operational in operation worldwide, located in Russia and China.
- **A government undertaking, Tenaga Nasional to potentially play a role.** We expect the Malaysia government to drive nuclear power plant development, with off-taker Tenaga Nasional potentially taking an active role in asset ownership. Nuclear power plants require substantial upfront capital (1,000MW: US\$4b-10b), but this is offset by a long operational lifespan of 60-80 years and stable fuel prices, resulting in one of the lowest levelised cost of energy (LCOE), second only to solar. The average payback period for NPPs sits at around 25 years. In comparison, a 1,000MW combined-cycle gas turbine power plant costs US\$800m-850m, with a projected operational lifespan of 25-30 years.
- **Sheltered from market-driven fuel prices.** The recent Middle East conflict and closure of the Strait of Hormuz have exposed Malaysia to sharp fossil fuel price swings (LNG: +110% ytd; coal: +10% ytd), exerting pressure on the country. Against this backdrop, nuclear power offers a compelling solution to the energy trilemma through its baseload reliability, predictable and affordable fuel supply and minimal carbon footprint. In essence, nuclear power offers a natural hedge against carbon fuel price volatility, supported by the stability of global uranium supply.
- **Public awareness: Shifting the narrative on nuclear power.** An essential component of Malaysia's preparedness for nuclear energy deployment is securing broad public trust and acceptance. This objective necessitates sustained transparency, structured educational initiatives, open consultation mechanisms, and embedded two-way engagement between regulatory authorities and the public across all phases of the nuclear development programme. Inadequate public communication may give rise to resistance, particularly among communities located within emergency planning zones, based on misinformed perceptions of safety risks and compulsory relocation, despite continued economic activity, agricultural productivity, livestock rearing, and environmental integrity in such areas.

Valuation/Recommendation

- **Maintain OVERWEIGHT; elevated orderbook driven by over 6.5GW of solar plant-ups.** We expect total solar PV capacity to exceed 6.5GW over 2026-29 as the government calls for tenders for the LSS6 and sees the take-off of CRESS projects. Assuming a construction cost of RM2.0m-3.5m per MW, total EPCC replenishment opportunities are estimated at a staggering RM13b-23b in the next five years. Additionally, potential opportunities of up to 8GW of brownfield and greenfield gas-fired power plants, as part of the government's decarbonisation plan, are a boon for the sector. **Our sector top picks are Tenaga Nasional, Solarvest, Pekat Group and Northern Solar.**

Sector Catalyst/Risk

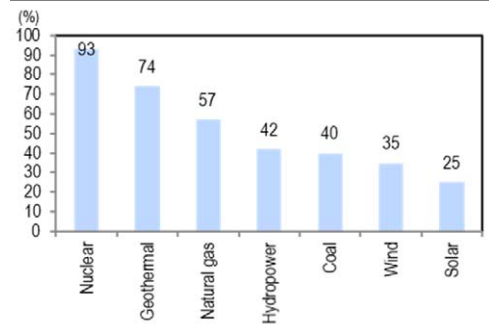
- **Malaysia's nuclear progress.** Malaysia has officially implemented the newly-amended Atomic Energy Licensing Act (Amendment) 2025, effective Dec 25. The new regulation stipulates over all activity involving atomic energy, including: a) handling of nuclear materials, b) possession or use of radioactive materials, c) operation of radiation generators, d) management of radioactive waste, and d) operation or decommissioning of nuclear-related facilities. This framework enables regulators to comprehensively oversee the entire nuclear energy lifecycle, from initial planning and development through to decommissioning. The amended Act further establishes the legal foundation

Capacity Factor

- Direct measurement of a power plant's efficiency.
- Measures how much electrical power is produced by a plant relative to how much could possibly be produced at peak capacity.

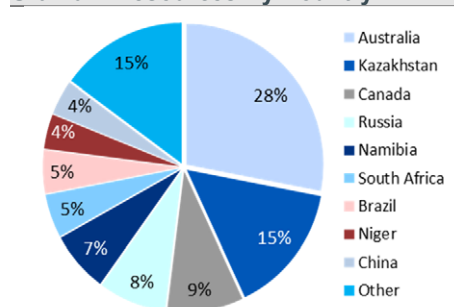
Source: National Academy of Sciences

Capacity Factor By Energy Source



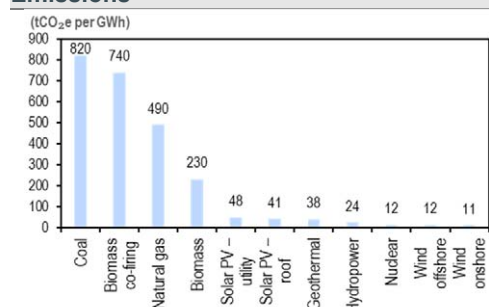
Source: Office of Nuclear Energy

Uranium Resources By Country



Source: WNA, BofA Global Research, UOB Kay Hian

Average Life-cycle CO2 Equivalent Emissions



Source: IPCC, UOB Kay Hian

Malaysia's EIA Considerations

Tropical climate	– Monsoon patterns – Rainfall intensity
Natural disasters	– Flood plains – Soil stability
Hydrology	– Water contamination risk – Marine ecosystem
Biodiversity	– Forest reserves – Staple agriculture – Essential livestock
Community	– Population density – Economic impact

Source: IAEA, Department of Environment Malaysia

for Malaysia to fulfil its international nuclear obligations, including the ratification and accession to at least eight International Atomic Energy Agency (IAEA) conventions and protocols, which are prerequisites for the deployment of nuclear power generation.

- **Where do ASEAN counterparts stand?** Following the introduction of the ASEAN Plan of Action for Energy Cooperation in 2025, ASEAN member states have reinforced their commitment to nuclear energy adoption beyond 2030, with near-term priorities centred on advancing regional collaboration. This includes: a) promoting nuclear energy to enhance energy security and accelerate low-carbon transition, b) enhancing communication strategies and public engagement, and c) fostering regional collaboration to facilitate development & deployment.
- **A waiting game.** Most ASEAN countries are currently in Phase 1 of nuclear infrastructure development, focusing on regulatory reforms, feasibility studies, EIAs, and engagement of international technical partners. Despite this progress, a majority maintains a “wait-and-see” stance, monitoring first movers to gain better clarity into deployment challenges such as climate risks and supply chain constraints. Vietnam and the Philippines are viewed as regional frontrunners, expected to set precedents that could accelerate the adoption of nuclear energy among other ASEAN countries. However, land-constrained nations such as Singapore may remain on the sidelines until SMR technologies achieve greater technological and regulatory maturity before undertaking meaningful commitments.

Environmental, Social and Governance (ESG)

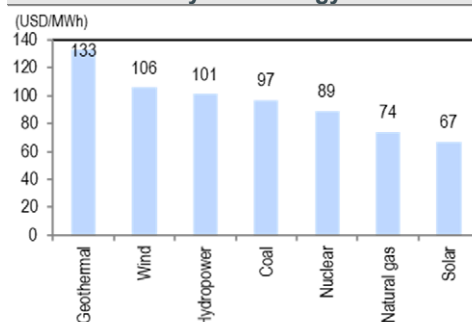
- **Environmental impact assessment.** The IAEA recommends a project specific environmental impact assessment (EIA) for the preferred NPP or SMR site, according to a country’s environmental laws and regulations. The EIA should stipulate: a) radiation exposure pathways to humans; b) baseline flora and fauna conditions; c) local population demographics and trends; d) cultural heritage preservation; e) water usage data, including cooling tower requirements; f) hazardous waste disposal sites and methods; and g) environmental impacts arising from construction activities.
- **Biodiversity and economic activities.** Agricultural production, livestock rearing, forestry assets, and wildlife within emergency planning zones (EPZ) have consistently been shown to coexist safely with nuclear power plant operations. Communities and economic activities within EPZs are able to operate normally, without the need for relocation, underpinned by stringent regulatory governance and continuous environmental monitoring. This coexistence is evidenced by numerous international precedents, including: a) Loire Valley, France (vineyard, wheat crops and cattle rearing); b) Somerset, UK (dairy farming and sheep rearing); c) Guangdong, China (aquaculture and livestock); and d) Gijang County, South Korea (fisheries and agriculture).
- **Spent fuel recycling.** Up to 96% of spent nuclear fuel can be reprocessed, with only approximately 3% ultimately classified as waste. The reprocessing pathway separates recoverable uranium and plutonium for recycling into fresh nuclear fuel. Prior to reprocessing, spent fuel is subject to a controlled cooling period in either water-based storage pools or dry cask systems, generally located at the nuclear power plant site. This cooling process generally takes 5-10 years before the fuel is suitable for reprocessing and enrichment. Advances in nuclear fuel-cycle technologies may further facilitate the extraction of select isotopes and metals for use in medical, industrial, and advanced energy applications.
- **Nuclear waste management.** Radioactive waste is currently managed through disposal in near-surface repositories or deep geological repositories. The World Nuclear Association estimates that around 97% of nuclear waste produced is low- or intermediate-level waste, requiring only near-surface

SMR

- Small-scale nuclear reactor with a capacity of 50–300 MW.
- Components factory-built and assembled on-site (modular construction) and facilitates incremental modular capacity deployment.
- Uses passive cooling mechanism, relying on gravity, natural circulation and thermal expansion (compared with active pumps and operator intervention).

Source: The NEA SMR Dashboard

Median LCOE By Technology



Note: Assume discount rate of 10%

Source: IEA, UOB Kay Hian

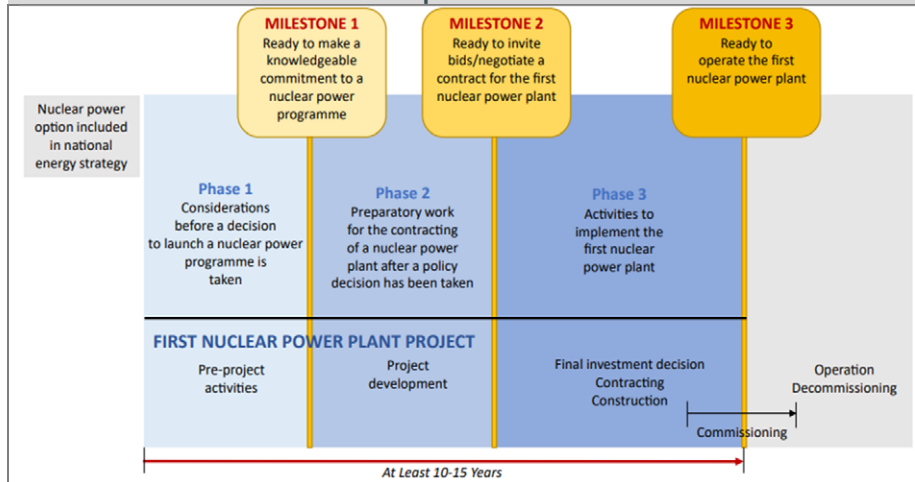
ASEAN Nuclear Adoption Progress

Countries	Progress
Malaysia	- Appointed MyPOWER as NEPIO - Amended its nuclear regulatory framework - Facilitating infrastructure readiness and nuclear energy management
Singapore	- Facilitating safety protocols and infrastructure readiness - Nurturing local talent and expertise - SMR is the most feasible option (due to land constraints) but waiting on proven operational track-record
Vietnam	- Revisiting the Ninh-Tuan NPP Project - Nuclear capacity plan of 4-6GW in 2030's - MOUs with the US, Russia, Japan for feasibility & SMR options
Philippines	- Planned nuclear capacity of 1.2 GW (2032) and 4.8 GW (2050) - Rehabilitating Bataan Nuclear Plant - Exploring new SMR partnerships
Indonesia	- Establishing NEPIO to prepare the NPP project implementation, in line with Net Zero target by 2060 - Included 2 x 250 MW nuclear capacity in the 2025-34 national electricity planning - Advancing site selection (Bangka Island)
Thailand	- Conducting pre-feasibility studies

Source: ASEAN Centre for Energy, The eCEOs

disposal. A 1,000 MWe reactor produces spent fuel requiring approximately 12 stainless steel canisters, each measuring 1.3 metres in height and 0.4 metres in diameter, representing a total volume of about 3 cubic metres. Notably, nuclear power remains the only energy source for which all materials and waste streams are fully accounted for, having been systematically managed through interim storage, recycling, or permanent disposal over decades without adverse environmental impact.

Nuclear Power Infrastructure Development



Source: IAEA

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